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CLASSIFICATION OF THE FOSSORIAL, PREDACEOUS AND PARASITIC WASPS, OR THE SUPERFAMILY VESPOIDEA.

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(Paper No. 17.—Continued from Vol. XXXV., p. 310.)

TRIBE II.—Mutillini.

This tribe, to the initiated, is readily distinguished by the eyes, which are usually quite differently shaped, rarely smooth and shining, and always distinctly faceted, although a few females have small ellipsoidal or somewhat rounded eyes, as in the tribes *Photopsidini* and *Sphaerophthalmini*, and therefore, if the greatest care is not given to other characters, could be confused with certain genera in those tribes.

Table of Genera.

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1. Eyes not large, oval, ovate or ellipsoidal, never emarginate within, distinctly faceted.....	2.
Eyes large, always distinctly emarginate within.....	13.
2. Apterous or subapterous forms.....	3.
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3. Subapterous or with rudimentary wings.....	7.
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Thorax with distinct sutures, the scutellum more or less differentiated.....	4.
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4. Mandibles dentate.....	5.
Mandibles edentate, acute at apex.	

- Thorax oblong, narrowed posteriorly, rounded in front, the scutellum very minute; eyes small, oval. (North America.)..... *Morsyma*, Fox.
(Type *M. Ashmeadii*, Fox.)
5. Thorax not ob-bell-shaped..... 6.
Thorax ob-bell-shaped, widest in front, the pronotum very short, wider than the mesonotum and a little wider than the head.
Head transverse, the temples narrow; ocelli wanting; scutellum present; abdomen spotted with white, the first segment narrowed into a slight petiole at base, but broad at apex and sessile with the second. (Asia, Africa.)..... *Spilomutilla*, Ashm., gen. nov.
(Type *Mutilla perfecta*, Radoszk.)
6. Thorax oblong, but compressed medially at the sides; head large, quadrate, the temples usually very broad, not oblique; ocelli distinct; scutellum indistinctly differentiated.
(Africa.)..... *Viereckia*, Ashm., gen. nov.
(Type *Mutilla dumbrodia*, Péring.)
Thorax oblong, as wide behind as before, or nearly, and only slightly compressed at the sides medially; head obtrapezoidal, the temples oblique; ocelli subobsolete; scutellum entirely absent.
(Africa.)..... *Apteromutilla*, Ashm., gen. nov.
(Type *Mutilla aeda*, Péring.)
7. Head large, quadrate, usually much broader than the thorax, the thorax oblong quadrate, the sides parallel, or nearly, the front angles acute; mandibles 3-dentate.
Head armed with a large tooth on each side beneath, the upper hind angles acute; scutellum present; clypeus bidentate; eyes oval, placed anteriorly, rather close to the mandibles. (North America.)..... *Myrmilloides*, André.
(Type *Mutilla grandiceps*, Blake.)
Head unarmed, the upper hind angles not acute; scutellum present; clypeus not bidentate. (Europe, Africa, Asia.)..... *Myrmilla*, Wesmael.
(Type *Mutilla distincta*, Lepel.)
8. Front wings with only *two* cubital cells..... 9.
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9. Not entirely black, the thorax red ; head transverse, rounded behind, the hind angles not acute.....10.
Entirely black.
Head transverse-quadrate, the hind angles acute ; mandibles bidentate.....Pseudomethoca, Ashmead.
(Type *Mutilla Canadensis*, Blake.)
Head transverse, rounded behind, the hind angles not acute.....Dimorphomutilla, Ashm., gen. nov.
(Type *Mutilla lunulata*, Spinola.)
10. Head transverse, wider than the thorax ; mandibles not long ; bidentate at apex. (Europe, Africa.).....Myrmilla, Wesmael.
Head transverse-quadrate, wider than the thorax ; mandibles long, narrow, arcuate, tridentate at apex. (Africa.)..Labidomilla, André.
(Type *Mutilla tauriceps*, Kohl.)
11. Mesonotum *with* furrows ; hind tibiae spinous on outer face.....12.
Mesonotum *without* furrows ; hind tibiae not spinous on outer face.
Not entirely black, the thorax red ; front wings with *two* recurrent nervures ; antennal joints 3 and 4 more than twice longer than thick. (Europe.).....Myrmilla, Wesmael.
Entirely black ; front wings with only *one* recurrent nervure ; antennal joints 3 and 4 hardly longer than thick.....(?) Dimorphomutilla, Ashm. (partim.)
12. Mandibles 3-dentate.
First and second joint of the flagellum not short, fully twice as long as thick. (South America.).....Euspinolia, Ashm., g. nov.
(Type *Mutilla chilensis*, Spinola.)
First and second joints of the flagellum short, the first distinctly shorter than the second. (Africa.).....Dasylabroides, André.
(Type *Mutilla capensis*, Sauss.)
13. Antennæ simple, never flabellate.....14.
Antennæ abnormal, flabellate.
Thorax with distinct parapsidal furrows ; the scutellum with a deep furrow across the base ; front wings with *three* cubital cells. (Africa.).....Psammotherma, Latreille.
(Type *Mutilla flabellata*, Fabr.)
14. Front wings with *three* cubital cells, or the third at least partially formed.....15.

- Front wings with only *two* cubital cells, the third entirely obliterated..... 24.
15. Scutellum abnormal, conically or triangularly elevated, especially medially at apex..... 16.
- Scutellum normal, not conically or triangularly elevated..... 17.
16. Mesonotum with distinct furrows; mandibles excised beneath, bidentate at apex: abdomen with the first ventral segment carinate medially, the hypopygium margined laterally, emarginate at apex. (Africa.)..... *Trogaspidia*, Ashmead.
(Type *Mutilla medon*, Smith.)
17. Mesonotum *with* distinct parapsidal furrows, or the furrows indicated posteriorly..... 18.
- Mesonotum *without* parapsidal furrows..... 23.
18. Mandibles beneath, before the middle, excised or sinuated, and usually with a process or tooth before the incision..... 19.
- Mandibles beneath simple, not excised or sinuated, and never with a process or tooth beneath..... 21.
19. Mandibles bidentate..... 20.
- Mandibles tridentate.
- Submedian cell longer than the median, the second cubital cell more or less triangular, the third large, hexagonal; first joint of the flagellum shorter than the second. (Europe, Africa, Asia.)..... *Mutilla*, Linné.
(Type *M. europaea*, Linné.)
20. Submedian cell longer than the median, rarely equal, the marginal cell about twice as long as wide; first joint of the flagellum about as long as the second; hind tibiae spinous and also with long hairs, (North and South America.)..... *Timulla*, Ashmead.
(Type *Mutilla dubitata*, Smith.)
- Submedian and median cells equal, the marginal cell not much longer than wide; first joint of the flagellum distinctly shorter than the second; hind tibiae *not* spinous, but with long hairs.
(Europe.)..... *Smicromyrme*, Thomson.
(Type *Mutilla rufipes*, Latr.)

21. Mandibles tridentate 22.
 Mandibles bidentate.
 Submedian cell longer than the median; disc of clypeus subconvex;
 first joint of the flagellum a little shorter than the second;
 second ventral segment normal. (Europe.) Ronisia, Costa.
 (Type *Mutilla brutia*, Pet.)
22. Second ventral segment carinate, and sometimes dentate posteriorly
 (Africa.) Barymutilla, André.
 (Type *Mutilla pythia*, Smith.)
23. Submedian cell longer than the median, the third cubital cell
 pentagonal. (Africa.) (?) *Dolichomutilla*, Ashmead.
24. Scutellum and metathorax normal, unarmed. 25.
 Scutellum and metathorax abnormal, armed with teeth. 27.
25. Thorax with the front margin slightly arcuate, the angles not acute;
 front wings with *two* recurrent nervures 26.
 Thorax with the frontal margin slightly concave, the angles *acute*;
 front wings with *one* recurrent nervure.
 Head transverse, not as wide as the thorax; mesonotum with
 distinct furrows; median and submedian cells of an equal
 length; abdomen with a white band.
 (Asia.) *Radoszkowskius*, Ashm., gen. nov.
 (Type *Mutilla simplicifascia*, Radoszk.)
26. Head subquadrate, *with* two tubercles between the antennæ, the
 temples broad; recurrent nervures converging and entering the
 second cubital cell close together.
 (Africa.) *Blakeius*, Ashm., gen. nov.
 (Type *Mutilla bituberculata*, Smith.)
 Head transverse, *without* tubercles between the antennæ, the temples
 not broad; recurrent nervures not converging, widely separated.
 (Africa.) *Mimecomutilla*, Ashm., gen. nov.
 (Type *Mutilla purpurata*, Smith.)
27. Scutellum transverse-quadrate, *tridentate* posteriorly; second ventral
 segment armed with a tooth. (Africa.) *Péringueya*, Ashm., gen. nov.
 (Type *Mutilla erynnis*, Péring.)
 Scutellum large, flat, *bidentate* posteriorly, a tooth at each hind angle
 that curves inwardly; second ventral segment normal, unarmed
 (Africa.) *Odontomutilla*, Ashmead.
 (Type *Mutilla Saussurei*, Sèchel.)

28. Thorax quadrangular, not much narrowed posteriorly, the sides parallel or nearly, sometimes laterally slightly sinuate or compressed medially, rarely obtapezoidal.....29.
 Thorax quite differently shaped, most frequently obpyriform, obovoid, violin-shaped or otherwise, usually narrowed posteriorly or much contracted at the sides.....39.
29. Pygidium not perfectly smooth, usually striate, rugulose, coriaceous or punctate, and with a pygidial area, i.e. with an elevated rim at the sides.....30.
 Pygidium usually smooth, without a distinct pygidial area, or the elevated rim is wanting or exceeding delicate.....44.
30. Thorax with the front angles rounded, *not* acute.....31.
 Thorax with the front angles acute.....33.
31. Lateral margins of the thorax and the upper margin of the metathoracic truncature dentate or denticulate.....32.
 Lateral margins of the thorax and the upper margin of the metathoracic truncature usually simple, not dentate at the most, and rarely with only the upper margin of the truncature dentate....34.
32. Thorax with sides parallel or nearly; head subquadrate, *without* tubercles between the antennæ; mandibles simple, unarmed; first joint of the flagellum obconical, about twice as long as thick, the second joint transverse. (Africa.).....(?) *Trogaspidia*, Ashmead.
 Thorax with side slightly compressed medially; head large, quadrate, *with* two tubercles between the antennæ; mandibles very long, tridentate (two widely-separated teeth within on inner margin); first joint of the flagellum very long, longer than 2 and 3 united. (South America.).....*Euspinolia*, Ashm., gen. nov.
 (Type *Mutilla chilensis*, Spin.)
33. Head quadrate, a little wider than the thorax, with *two* triangular tubercles between the antennæ. (Africa.) *Blakeius*, Ashm., gen. nov.
 (Type *Mutilla bituberculata*, Smith.)
 Head transverse, not wider than the thorax, *without* tubercles between the antennæ. (Asia.) *Radoszkowskii*, Ashm., gen. nov.
 (Type *Mutilla simplicifascia*, Radoszk.)
34. Upper margin of the metathoracic truncature armed with three or more teeth.....35.
 Upper margin of the metathoracic truncature normal, unarmed...36.

35. Thorax not twice as long as wide, the upper margin of the truncature armed with 3 to 5 teeth; head large, quadrate, the temples very broad. (Africa.).....Péringueya, Ashm., gen. nov.
(Type *Mutilla euterpe*, Péring.)
Thorax a little more than twice longer than wide, the upper margin of the truncature armed with about 8 teeth; head subquadrate, the temples not especially broad.
(Africa.)Pristomutilla, Ashm., gen. nov.
(Type *Mutilla pectinata*, Radoszk.)
36. Mandibles at apex *not* tridentate.....37.
Mandibles at apex tridentate, the outer tooth the longest. (Europe, Africa, Asia.).....Mutilla, Linné.
37. Mandibles *not* emarginate beneath towards base, *without* a process or projection.....38.
Mandibles emarginate beneath towards base, *with* a process or projection before the emargination. (Europe.)....Ronisia, Costa.
(Type *Mutilla brutia*, Pet.)
38. Head subquadrate or transverse, not or scarcely wider than the thorax.
Mandibles bidentate; third joint of the antennæ not longer than the fourth, shorter than the fifth, or no longer.
(Europe.).....Smicromyrme, Thomson.
Mandibles acuminate, edentate, rarely with a slight tooth within before apex; third joint of the antennæ longer than the fourth, usually as long as joints 4 and 5 united. (North and South America.).....Timulla, Ashmead.
Head large, quadrate, wider than the thorax, the temples broad; thorax more than twice longer than wide; abdomen with two white dorsal spots on second segment. (Africa.)...Viereckia, Ashmead.
39. Thorax not escutcheon-shaped.....40.
Thorax somewhat escutcheon-shaped, sinuately emarginated or contracted from about the apical one-fourth, the posterior margin and angles rounded; head transverse, as wide as the thorax; eyes oval. (Africa.).....Miniecomutilla, Ashm.
40. Thorax quite differently shaped, *without* a lateral tooth at the apical third.....41.
Thorax sinuate and slightly narrowed posteriorly from a lateral tooth at the apical third.

Mandibles simple, edentate ; third joint of the antennæ obconical, hardly longer than thick at apex.

(Africa.).....*Odontomutilla*, Ashmead.

41. Thorax not hexagonal, usually obpyriform, obovoid, obtapezoidal or violin-shaped 42.

Thorax distinctly hexagonal, widest at the angles a little before the middle, squarely truncate anteriorly.

Head quadrate, the temples broad ; eyes oblong-oval.

(Africa.).....*Xenomutilla*, Ashm., gen. nov.
(Type *Mutilla eurydice*, Péring.)

42. Thorax not much elongate, less than thrice as long as wide 43.

Thorax much elongate, obpyriform, at least thrice as long as wide, or even longer ; pygidium towards apex usually smooth, shining, the pygidial area nearly obliterated.

Thorax more than thrice as long as wide, coarsely pitted or rugose, the front margin rounded, the lateral margin with a triangular tooth before the middle ; second ventral segment with a median tooth ; head subquadrate, hardly as wide as the thorax, rounded behind, the temples broad ; mandibles acuminate at apex, but with a tooth within near the middle, usually not visible when the mandibles are closed.

(Africa.).....*Dolichomutilla*, Ashmead.

Thorax about thrice as long as wide, but not coarsely sculptured, the front margin squarely truncate, the lateral margins without a tooth ; second ventral segment unarmed ; head transverse, not wider than the thorax, the temples narrow ; mandibles acuminate, edentate. (Asia.).....*Promecilla*, André.

(Type *Mutilla regia*, Smith.)

43. Thorax obpyriform, obovoid or subtrapezoidal, narrowed posteriorly.

Thorax subtrapezoidal ; head subquadrate, rounded behind, the temples broad ; eyes small, oval ; mandibles arcuate, acuminate.

(Africa.).....*Brachymutilla*, André.

Thorax obovoid or obpyriform.

Head quadrate, the temples broad ; eyes ellipsoidal ; mandibles conically-pointed ; third antennal joint longer than the fourth, but not twice as long as thick. (North

America.).....*Morsyma*, Fox,

- Head subglobose; eyes not small, oval or ovate; mandibles stout, conically-pointed; third antennal joint fully twice as long as thick, obconical, longer than the fourth. (Europe, Africa.)..... *Dasylabroides*, André.
(Type *Mutilla caffræ*, Smith.)
44. Thorax more or less contracted at the sides, almost violin-shaped or obtrapezoidal; if somewhat quadangular the sides sinuated.... 45.
Thorax quadangular or nearly, trapezoidal or obpyriform..... 46.
45. Thorax, seen from above, almost violin-shaped.
Head large, quadrate, wider than the thorax, the upper hind angles acute, beneath armed with a tooth on each side; mandibles usually bidentate, rarely simple, the outer tooth the longer. (North America.)..... *Pseudomethoca*, Ashmead.
Head transverse, usually wider than the thorax, but with the hind angles rounded and beneath unarmed; mandibles with a tooth within before apex. (South America.)..... *Dimorphomutilla*, Ashmead, gen. nov.
(Type *Mutilla lunulata*, Spin.)
- Thorax, seen from above, almost quadangular, with the sides bisinuate or crenulate; head transverse, a little wider than the thorax, the cheeks unarmed; eyes ellipsoidal; mandibles bidentate. (Africa.)..... *Barymutilla*, André.
(Type *Mutilla pythia*, Smith.)
46. Thorax not trapezoidal..... 47.
Thorax trapezoidal, slightly narrowed *anteriorly*.
No median longitudinal carina on thorax, the lateral margins finely denticulate; head large, nearly quadrate, wider than the thorax; eyes oval; hind tibiae spinous; scape long, somewhat curved; first joint of the flagellum very long, three or more times longer than the second; tarsi long and slender; mandibles large, falcate. (Africa.)..... *Labidomilla*, André.
A feeble median longitudinal carina on thorax, the lateral margins not acute, the hind angles acute; head oblong, longer than wide; eyes oval; middle and hind tibiae smooth, not spinous. (Europe, Asia, Africa.)..... *Nanomutilla*, André.
(Type *Mutilla voucheri*, Turn.)
47. Thorax quadrangular or nearly, the sides parallel or nearly, rarely much compressed or sinuate at sides medially..... 48.

- Thorax obpyriform or much narrowed posteriorly.....52.
48. Thorax quadrangular or nearly49.
- Thorax about twice as long as wide, the sides more or less compressed or sinuate medially.
- Head not wider than the thorax; abdomen ovate, subsessile, the second segment large, with two white spots.
- (Africa.)Apteromutilla, Ashmead.
50. Head somewhat large, but without a tooth on each side beneath, the hind angles rounded, not acute; eyes oval or oblong; antennal scape not specially long51.
- Head large, with a tooth on each side beneath, the hind angles acute; eyes oval; antennæ rather widely separated, the scape long, the third joint very long; mandibles long, narrow, arcuate and bidentate at apex. (North America.).....Myrmilloides, André.
51. Mandibles 3-dentate; third antennal joint only about twice as long as the fourth, or as long as joints 4 and 5 united. (Europe, Africa, Asia.).....Myrmilla, Wesmael.
- Mandibles acuminate at apex, with a tooth within before apex, never tridentate; third antennal joint more than twice longer than the fourth. (Europe, Africa.).....Edrionotus, Radoszkowski.
- (Type *Mutilla capitata*, Lucas.)
52. Head not wider than the thorax, strongly concave beneath, the margins rimmed; second abdominal segment anteriorly depressed, the depression limited by an oblong cushion.
- (Asia.).....Platymutilla, André.
- (Type *P. quinquefasciata*, André.)

A NEW JOINT-WORM PARASITE FROM RUSSIA.

BY WILLIAM H. ASHMEAD, M.A., D.SC., WASHINGTON, D. C.

Homoporus Vassiliefi, sp. nov.—♀—Length, 2 mm. Head and thorax bluish, finely, closely punctured, the face and the pleura with a greenish metallic lustre, the metapleura decidedly brassy; antennæ brown, the scape yellow; legs concolorous with the thorax, the hind coxæ with a metallic greenish fringe, the apices of all femora, all tibiæ and tarsi, except the last joint, yellow, the last joint dark fuscous; wings hyaline, the nervures brown, the stigmal vein two-thirds the length of the marginal, the

postmarginal vein very nearly as long as the marginal; abdomen aeneous black, tinged with metallic green basally at the sides, ovate, somewhat pointed at apex, very little longer than the thorax.

Type.—Cat. No. 1010, U. S. N. M.

Host.—Hym.: *Isosoma eremitum*, Portschinsky.

Hab.—Oufa, Russia. Described from a single specimen, received from Mr. Ivan Vassilief, of St. Petersburg.

Two of the Russian joint-worms described by Portschinsky, namely, *Isosoma apterum* and *I. eremitum*, should be relegated to the genus *Philachyra*, Haliday.

CONCERNING GASTROPHILUS EPILEPSALIS, FRENCH.

Mr. Washburn's note in the November number (p. 320) induces me to state that *Gastrophilus epilepsalis*, French, is no *Gastrophilus* at all; in fact, not the larva of an Cestrid. The figure shows that it is a Muscid larva, very probably of *Calliphora*, certainly so if the figure is correct. The species cannot be identified until more of these forms are reared. French's figure indicates that it is very close to the European *C. vomitoria* as figured by Piepers. There is no definite character known to identify Cestrid larvæ, but the larvæ of some Muscidae can be separated from the Cestridæ. The larvæ of *Calliphora* differ somewhat in the structure of the mouth from any known Cestrid larvæ. That Prof. Washburn had a *Gastrophilus* is quite possible from the habits; but it is not the *G. epilepsalis*, French.

NATHAN BANKS.

CORRESPONDENCE.

SIR,—Please insert the following addition to my paper on *Isodontia*, published in the CANADIAN ENTOMOLOGIST for October, 1903 (p. 271):

Isodontia macrocephala, var. *cinerea*. Described from four specimens taken at Enterprise, Fla.; Columbia, S.C.; Texas, and one without locality. These cotypes are in the collections of the U. S. National Museum, American Entomological Society, Mass. Agricultural College, and Dr. W. H. Ashmead, the collections from which I received them.

H. T. FERNALD.

SOME NEBRASKA BEES.

BY J. C. CRAWFORD, JR., WEST POINT, NEBR.

Melissodes brevicornis, Cress.—Lincoln, Aug. 12-27, on *Teucrium Canadense*. The ♀ differs from the ♂ only in having the face-parts black, pubescence on face lighter, segments 2 to 4 only banded; the scopa is yellowish. The ♂♂ taken all had the tibiæ and tarsi entirely fulvous.

Nomada grindeliae, Ckll.—♀. Head and thorax black, shiny, very sparsely punctured; abdomen red, very sparsely and finely punctured; face covered with decumbent, silvery-white pubescence; mandibles and labrum apically ferruginous; antennæ ferruginous beneath; mesothorax almost impunctate medially; scutellum sub-bilobate; pleura of mesothorax swollen, whole thorax with white pubescence, especially pleura and metathorax; form more robust than in ♂. Length 7 mm.

♂.—The posterior femora have a small tooth beneath, toward base. Common at Lincoln in August; taken on *Solidago Missouriensis*, *Grindelia squarrosa*; *Euphorbia* and *Lactuca*.

Mr. Pierce informs me that it is probably a parasite of *Halictus ligatus*, Say.

Stelis lateralis, Cress.—West Point, June 10, '01. Taken at the holes of *Alcidamea simplex* in rose bushes.

Neopasites Illinoiensis, Robt.—Lincoln and West Point, Sept. 4 to 11, on *Solidago rigida* and *Grindelia squarrosa*.

N. heliopsis, Robt.—West Point and Lincoln, Aug. 30 to Sept. 11, on *Aster*, *S. rigida* and *G. squarrosa*.

Halictoides marginatus, Cress.—Common at Lincoln and West Point in August and September; found on *Grindelia*, *Helianthus*, *Solidago*, *Teucrium*, *Bidens*.

H. maurus, Cress.—Sioux Co., June, on Campanula. Mr. Viereck, to whom this was sent for comparison with Mr. Cresson's types, informs me that the types are all males, and not females, as stated in the original description.

Perdita maura, Ckll.—Many specimens from both Lincoln and West Point, but all on *Physalis*. Dr. Graenicher writes that he has found it burrowing in loamy soil at Milwaukee, Wis., and regards it as an oligotropic visitor of *Physalis*. Prof. Cockerell writes that it may possibly be found on *Aster* growing in the vicinity of *Physalis*, and no doubt this was the case in the type material.

The abdominal segments 2 and 3 or 2-4 have a small white spot on each side.

P. zebrata, Cress.—Scott's Bluffs, Aug. 14, 1901, on *Cleome*. New to Nebraska.

Panurginus Piercei, n. sp.—♂. Black, head closely and rather coarsely punctured above antennæ, sparsely so below; scape of antennæ black, coarsely punctured in front; flagellum dark; clypeus, labrum, base of mandibles, lateral face-marks nearly as high as insertion of antennæ and broad above, dog's-ear marks, supra-clypeal area, all tarsi, anterior tibiæ in front, spot at apex of femora in front, base and apex of all tibiæ, yellow; pubescence of head and thorax rufo-ochraceous, dense on thorax; thorax rather coarsely and sparsely punctured; wings dusky, more so at apex; nervures and stigma dark; tegulæ testaceous; metathorax roughened, the base irregularly rugose; base of first abdominal segment impunctate, the disc punctured; all the other segments densely and strongly punctured, apical margins broadly depressed, shiny and transversely lineolate; depressed margins at sides and apical segments all over with thin whitish hairs; margin of clypeus and of process of labrum black; clypeus with a median impunctate area, in the middle of which is a longitudinal depressed line not quite reaching apex of clypeus.

Length 8 mm.

♀.—Similar, form broader, punctuation finer; yellow confined to spots on four anterior knees; clypeus without impunctate area and depressed line; process of labrum trapezoidal, base much wider than apex, slightly emarginate; wings almost hyaline, nervures testaceous, but stigma dark; first abdominal segment impunctate, lineolation plainer than in the ♂; narrow apical margins of segments testaceous; segments not so plainly depressed; fimbria and scopa whitish.

Length 8-9 mm.

A pair from nest, Lincoln, Nebr., Sept. 7, 1903 (W. D. Pierce, coll.); also six other ♀♀ (not from nests); a ♂ West Point, Nebr., Sept. 12, 1903, on *Bidens* (Crawford, coll.).

Dedicated to Mr. Pierce, who first found the species, in recognition of his work on the habits and parasites of bees.

Differs from *P. rudbeckiae* in its larger size, dark tubercles, presence of dog's-ear marks, clypeus ♂ with depressed median line, instead of "a broad median depression, which is impunctate or nearly so."

Panurginus Nebrascensis, n. sp.—♂. Black shining labrum, base of mandibles, clypeus, lateral face-marks as high as insertion of antennæ,

supra-clypeal and dog's-ear marks, a line in front of scape of antennæ, spot on tubercles, knees, front tibiæ except black line on rear, base and apex of intermediate and rear tibiæ, and all tarsi, lemon-yellow; face with sparse large punctures as high as antennæ, above this closely and more finely punctured; vertex and head behind eyes with sparse, large and deep punctures; pubescence of head and thorax sparse, whitish; mesothorax with rather large but not close punctures; scutellum with coarse punctures; postscutellum closely and more finely punctured; base of metathorax enclosed, longitudinally striate; truncation and sides dull from fine, close punctures; sides of mesothorax shiny, and with coarser and sparser punctures; tegulæ testaceous; wings dusky, darker apically; base of abdominal segment smooth, beyond with rather close punctures; apices of segments depressed and transversely striatulate; segments beyond first closely and finely punctured, abdominal segments clothed with very short yellowish pubescence, visible only in certain lights.

♀.—Similar, but lacking yellow marks of male; mesothorax more finely and sparsely punctured; punctures of truncation of metathorax of pleura finer; first abdominal segment almost impunctate; abdomen lacking the pubescence of ♂; anal fringe reddish; scopa whitish.

Lincoln and West Point, Nebr.: on *Solidago rigida* and *S. Missouriensis*, and also *Grindelia squarrosa*. Aug. 24 to Sept. 11. 20 ♂'s, 8 ♀'s. Sexes in copula.

Andrena Alicie, Robt.—A single specimen on *Bidens chrysanthemoides*, Sept 19, 1903, at West Point. New to Nebr.

Our other fall *Andrenas* are *pulchella*, *helianthi*, *solidaginis*, *nubecula* and two apparently undescribed species.

Sphecodogastra Texana, Cress.—Lincoln, Sept.; on *Grindelia*; West Point, Oct.

Halictus aberrans, n. sp.—♀. Black, shiny, with thin pubescence; head finely and closely punctured; thorax rather sparsely and finely punctured; clypeus sparsely punctured; antennæ dark; tegulæ black, externally honey coloured; wings slightly milky and nervures honey colour; legs black, with a very thin loose scopa of silvery-white hairs; base of metathorax finely irregularly wrinkled; abdomen very shiny, finely and sparsely punctured, punctures more dense toward bases of segments, margins of segments light testaceous, and with bands of white hair on segments one to four.

Length about 9 mm.

Three specimens: Sioux Co., Nebr., June 3, on *Symphoricarpos*; Crawford, Nebr., July 28, on *Cleome*; Manitou, Colo.

A NEW GENUS OF BEES.

BY J. C. CRAWFORD, JR., WEST POINT, NEBR.

Protandrenopsis, new genus.—Labial palpi four-jointed, 1 about twice as long as 2-4 together, 2-4 slightly decreasing in length; maxillary palpi 6-jointed, 1 and 2 subequal, longer than any of the following joints; 3; 5 and 6 subequal, 4 slightly longer; tongue long, lanceolate; mandibles simple; labrum transverse, process of labrum large, almost covering labrum; foveæ present, small; stigma large, well developed, nearly two-thirds the length of the obliquely truncate, subappendiculate marginal cell, which is about as long as the two submarginals together; second submarginal fully one-third longer than the first, receiving the first recurrent nervure about one-third from base and the second near apex; median cell along the median nervure, a little longer than the submedian, the transverse median nervure joining the median just before the origin of the basal nervure; scopa on posterior tibiae, first joint of tarsi and on venter.

Type, the following species:

Protandrenopsis fuscipennis, n. sp. ♀.—Black, somewhat shining, almost entirely nude, the pubescence being confined to the golden-yellowish anal fringe and scopa on legs, a little inconspicuous pubescence around insertion of antennæ and on vertex, a line on prothorax passing around behind tubercles, some yellowish pubescence on rear of head, on under side of insect and a few plumose hairs at extreme side of abdominal segments; all pubescence inconspicuous and not showing from above, except fimbria and scopa; head closely and rather coarsely punctured, more coarsely so on sides of face; process of labrum very large, concave, the anterior margin bent upwards, process smooth and shining, basally a little roughened and with a median ridge, apically subemarginate; rest of labrum covered with yellowish pubescence; foveæ narrow, short, deep, the lower end nearer eye than the upper; mandibles black, obscurely reddish medially; mesothorax coarsely and rather sparsely punctate, the pleura confluent so; sides of metathorax finely roughened, the truncation closely and finely punctate, becoming sparse and coarse at top, laterally; base of metathorax narrow, rounded behind and bounded by a carina; behind this an impunctate space; enclosed base with coarse, quite regular rugæ, almost what is called a transverse row of shallow pits in the genus *Colletes*; wings very deeply infuscated; nervures and stigma blackish; tegulae black anteriorly, dark testaceous

posteriorly; legs black, *anterior coxae each with a long pubescent spine on the inside behind trochanters*, anterior and middle knees with a yellow spot, their femora thickened and keel-shaped beneath; inner spur of hind tibiae finely serrate; scopa golden-yellowish, more reddish on tarsi, first joint of hind tarsi produced to a free apex reaching tip of second joint; abdomen coarsely and rather closely punctate, the apical margins of segments 1-4 broadly depressed, shining, somewhat lineolate; at sides of segment 2 a small, oval, depressed spot; the part of the segment covered by the preceding segment is finely lineolate and the posterior margin finely punctured; this covered portion produced at each side of segments 2-4 as a finely-punctured triangle with the apex posterior; venter black, apical half of segments closely punctured, scopa yellowish.

Length 10 mm.

Two specimens collected by the author at West Point, Nebr., Sept. 18 and 20, 1903, on *Bidens chrysanthemoides*.

♂ unknown.

The intense black colour, unrelieved by any pubescence, and the very dark wings, make this a conspicuous insect. Viewed from above, it is all black except the fimbria and scopa on legs.

The generic name is given on account of the similarity to *Protandrena* in venation, in facial characters and general characteristics. It has a very different tongue, however.

In Ashmead's table this would run to *Panurgidae* to number 6, but differs from either division under that in having the second submarginal much longer than the first. It is, I consider, a long-tongued *Andrenid* with but two submarginals, more closely related to *Protandrena* than any other genus, but the tongue about as in *Panurginus*, which genus, it is interesting to note, has similar foveae, and a large species of which would look very similar to *Protandrenopsis* ♀. From the yellow knees of *fuscipennis* ♀ I should imagine that the ♂ has more or less yellow on the face.

DR. L. O. HOWARD, Chief Entomologist of the Department of Agriculture, Washington, delivered at Toronto, on Saturday, November 7th, a lecture on "Some International Work with Insects." It was given under the auspices of the Canadian Institute, in the new medical building of the Toronto University, and was the first of a series provided for by a gift from Sir Sandford Fleming. The lecture attracted much attention, and long reports of it were given in the Toronto daily papers on the Monday following.

MISCELLANEOUS ENTOMOLOGICAL NOTES.

BY H. H. LYMAN, MONTREAL.

There must be many facts known to entomologists which, though not sufficiently important to work up into an article for the entomological magazines, are still of much interest, and worthy of publication, and I would like to suggest that a page or part of a page at the end of each number of the "CANADIAN ENTOMOLOGIST" be set aside for this purpose, and that correspondents be invited to send brief notes of rare captures or other interesting items.*

NEMEOPHILA SCUDDERI, Pack.

In July, 1890, when at Nepigon, I obtained eggs of this species, which had been described by the late Henry Edwards under the name *Selwynii*,† and carried the larvæ through to imago, and in CAN. ENT., XXV., 248, published a paper on the preparatory stages of this species. On account of my rapid travelling across the continent and back again to Montreal, and being much occupied in collecting Lepidoptera and plants, sight-seeing and photographing, I was not able to give these larvæ very close attention, and was afraid that I had missed some of the moults, but as Dr. Fletcher expressed the opinion that if I had descriptions of four moults, that was probably all there were, I ventured to publish my notes; but in 1895 Dr. Fletcher kindly sent me a moth and 12 eggs of the form found at Olds, N.-W. T. These I failed to carry to imago, but carried two past 7th moult, and so found that my previous observations had been inadequate. In 1902 I was again indebted to Dr. Fletcher for eggs from Banff, and carried seven to imago, getting some nice variations, but as I was exceedingly busy, and knew that Dr. Fletcher and Mr. Gibson were also rearing the species, I did not take any further notes.

EGG OF ALBUNA TORVA, Hy. Edw.

A female of this species having been captured on a flower by one of those present at the excursion of the Montreal Branch of the Ent. Soc. Ont., to St. Adele, Q., on 6th June, 1896, the writer secured it and obtained about 55 eggs, which were laid loose and all at once.

Length, .875 mm.; width, .625 mm.

Rather almond shaped, or somewhat like a hen's egg, except that the transverse section would be oval. Perfectly smooth and shining. Light

*The Editor will always be pleased to receive notes of this kind for publication.

†In Dyar's Catalogue this name is erroneously credited to Neumoegen,

brown in colour. On 14th June, eight days after being laid, they appeared to be shrivelling as though infertile. They, however, hatched on 20th June. Egg period 14 days.

EGG AND YOUNG LARVA OF *HEPIALUS ARGENTEOMACULATUS*, Harris.

Laid on 15th July, 1896. Length, .75 mm.; width, .58 mm.

Rather even oval. Smooth, under a $\frac{2}{3}$ -inch objective seen to be very slightly roughened.

White when laid, soon turning black.

Hatched about 7th August. Egg period about 23 days.

Length, 1.75 mm. Head rather large, it and the plate on first thoracic segment dark brown. Body slender, creamy white, with simple setæ as long as or longer than the diameter of the body.

PAPILIO BREVICAUDA, Saunders.

At the annual meeting in 1898, Mr. Winn read a paper on this species, and Dr. Fyles, in commenting on it, as reported on p. 38 of the 29th Annual Report, stated that he had found the larvæ hard to please. He did not mention whether he had tried parsley.

I never had so large a percentage of success with any other species. I received that year, from Mr. D. Brainerd, two eggs out of five which Mr. Winn sent him, which duly hatched, and I carried both larvæ through to imago without the least difficulty. I took them with me to the meeting of the A. A. A. S. in Boston, and afterwards to Prout's Neck, Me. At Prout's Neck I found an umbelliferous plant which they preferred to parsley, though when I returned home I fed them on parsley again. Both imagos are now in my collection.

THECLA TITUS, Fabr.

A fine female was taken in 1896, probably in August, and confined with wild cherry. Five eggs were laid, three on the leaves near the edge and two on the twig, one on each side of the base of a leaf petiole.

The egg is round, Sea Urchin shape; 1 mm. in diameter. The projections are coarser, and much closer together than shown in Scudder's Fig. 11, Plate 65. One was pale yellow, the others considerably tinged with orange.

In the spring all the eggs were found to be more or less chipped at the micropyle; one had the whole micropyle bitten out, and the larva could be seen inside the shell, but it was apparently dead, as there was no movement, and none succeeded in getting out.

I have had the same trouble with the eggs of *Lycena Scudderii**,

*Can. Ent., XXXIV., 127.

and do not know how to account for it, unless it be that these eggs with thick shells and heavy sculpture, in which these species pass the winter, require to be softened by the carbonic acid washed down by the rain before the young larva can eat its way out.

THE AUTHORSHIP OF PSEUDANARTA.

BY THE LATE A. RADCLIFFE GROTE, HILDESHEIM, GERMANY.

[In our September number, page 257, the late Professor Grote, in his "Corrections and Notes on Dr. Dyar's List of Noctuids," stated :

"124. As I have shown in these pages, the citation to *Pseudanarta* of Hy. Edwards is spurious." At the time he wrote these words he had sent us the following paper, and supposed that it would have been published before these "Corrections" appeared.—Ed. C. E.]

The history of the generic term *Pseudanarta* is as follows :

1878. Grote, Bull. U. S. Geol. Surv. 178 : *crocea* (flava) sole species, and therefore type.

1882. Grote, New Check List, New York, 27 : flava, var. *crocea*, singula, flavidens, aurea. The genus is credited without citation to Hy. Edwards, under the mistaken idea, derived from a previous correspondence, that this writer had used or described the genus. The name *Pseudanarta* was originally proposed in letters by Grote for Edwards's *Anarta crocea*, in which the eyes are naked, the tibiae unarmed, and which is, in reality, as originally stated by Grote, allied to *Hadena*, Led., nec Schrank.

1889. J. B. Smith, Ent. Amer., V., 175 : falcata, aurea, flava (*crocea*), singula, flavidens. The citation to Hy. Edwards is now supplied and reference is made to : "Proc. Cal. Ac. Sci., Vol. 6, p. 133, 1875." But this page contains the original description of *Anarta crocea*, and no mention is there made of *Pseudanarta*. This specific description refers to what is only a probable variety of the previously described *Hadena flava*, Grote. After examination of the communications of Hy. Edwards to the California Academy : "Pacific Coast Lepidoptera, Nos. 1 to 22" (all published), no mention of *Pseudanarta* is found in any one of them. This citation by Prof. Smith in 1889 justified the subsequent use of Hy. Edwards's name as author in the absence of a verification. The erroneous citation is twice repeated in the Washington Catalogue, p. 148, and must have been made without consulting the text. It was probably supplied to support Grote's incorrect use of Hy. Edwards's name as authority for *Pseudanarta* in the first instance.

NOTES ON THE ENTOMOLOGY OF PECOS, NEW MEXICO.

BY T. D. A. COCKERELL, COLORADO SPRINGS, COLO.

1. *Two bees with unexpected habits.**Halictus galpinsia*, n. sp.*Halictus amicus*, var. *a*, Ckll., An. Mag. Nat. Hist., Jan., 1904, p. 126.

A single specimen was collected one evening at Las Vegas, at a flower of *Gaura coccinea*. I then remarked of it: "Face narrower than type; possibly a distinct species." It seemed strange that it should be visiting the *Gaura*, but it did not occur to me that I had a genuinely vespertine bee. On June 22, 1903, at Pecos, I was astonished to see a number of bees busily collecting pollen from the flowers of *Galpinsia fendleri* (a large yellow evening primrose) after sunset, at 7.30 p. m. I collected some, and found that they were my "*Halictus amicus*, var. *a*," which is evidently a distinct species. It is readily known from *H. amicus* by the narrower face and more sparsely punctured clypeus. It belongs to Robertson's genus *Evyllaenus*, and is distinguished from the species in his table by the following combination of characters: Abdomen pruinose with white hair, the thin pubescent fasciæ entire; first segment shining, distinctly but minutely punctured; hind spur of hind tibia with five teeth, the basal three very long; enclosure of metathorax minutely cancellate, semi-lunar, concave, with a raised rim; stigma large, reddish-honey-colour. The scape is very long; flagellum dark, faintly brownish beneath at the end. The type specimen is from Pecos.

Halictus ovaliceps, Ckll., 1898.

Pecos, N. M., at flowers of *Castilleia integra*, June 23 and 24 (W. P. Cockerell.)

This peculiar bee was known only by a single example, taken at Santa Fé. My wife has rediscovered it, and has ascertained that it habitually visits the *Castilleia*, which has not been considered a bee-flower at all. (Compare Robertson, Trans. St. Louis Acad., 1891, p. 598.)

2. *A new Aphid on Lonicera.**Rhopalosiphum Grabhami*, n. sp.

♀.—Winged form: Spread of wings $8\frac{1}{4}$ mm., length of body about 2 mm., of antennæ about 2 mm.; measurements in μ : Antennal joints (1) 90, (2) 60, (3) 670, (4) 430, (5) 360, (6a) 120, (6b) 650; marginal cell about 850 long; radius 3 to branch (radius 1+2) 800, cauda

broad and thick, about 220 long, 330 broad; nectaries about 350 long, strongly swollen in the middle. Body entirely shining dark olive-brown, without markings; legs whitish, suffused with gray, apical portion of femora darkened; antennæ pale; wings hyaline, including veins; beak short, reaching only about half-way to middle coxæ; frontal tubercles very distinct; third and fourth antennal joints with very numerous sensoria, over 30 visible in one view on third, 17 in a row on under side, where they are most numerous.

Pupa with abdomen purplish; immature forms show very minute tubercles on abdomen.

Larva dark green; abdomen more or less tuberculate.

Hab.—Pecos, N. M., June 7, 1903 (Dr. M. Grabham). On *Lonicera involucrata*, curling the leaves, the affected parts of which become deep crimson above, the veins white. The first stage of change consists of greenish-yellow spots, which give way to crimson. The effect on the plant is very like that of *Rhopalosiphum ribis* on *Ribes*.

A NEW NORTH AMERICAN CATOCALA.

Professor N. J. Kusnezov, of St. Petersburg, Russia, has recently described a new *Catocala* from Texas, with four figures. A reprint of the description of the species may be of interest to American collectors, hence I reproduce it below:

"*Catocala orba*, Kusnezov.—Expanse of male 48 mm; size of *C. Judith*, Strecker.

"Antennæ of male ciliate, gray, scaled above, with slight tuftings of hair below. (Palpi broken off.) Front densely covered with whitish-gray hairs. Patagia and front parts of tegulæ and mesothorax dark brown; vertex gray; the rest of tegulæ, nota, and crest on metathorax, whitish-gray. Upper part, sides and crests of the abdominal somites dark gray; anal tuft long, dark gray, lighter below. Thorax on the under side and femora thickly clothed with long, dirty white hairs and scales. (Fore tibiæ broken off.) Middle and hind tibiæ and tarsi gray, spotted and ringed with black. First pair of spurs of hind tibiæ very long and acute.

"Fore wings on the upper side pale gray (resembling somewhat the colour of fresh specimens of *C. concumbens*, Walker), greatly suffused on costa and at base of wings with white scales; darker in terminal area. Transverse lines visible, but very indistinct. Basal line fine, angulated;

basal dash absent. T. a. line forms a brown spot on the whitish costa and two dentations below it; the rest indistinct. Median space with a dark spot in the middle of costa, running into the reniform. T. p. line visible in its upper part alone, beginning with a dark spot on the white costa and forming two subequal dentations, filled inwardly with black; the rest indistinct. Subreniform absent. Reniform dark gray, edged with pure white. Subterminal waved line distinct, whitish, separated from the t. p. line by a light brownish irregular shade. Marginal lunules very small, almost wanting. Cilia uniformly gray.

"Hind wings on the upper side black, base covered by brownish-gray hairs. Cilia at apex dirty whitish, the rest dark gray.

"Ground colour of wings on the under side black; fasciæ very indistinct.

"Fore wings: base dark grayish-black, basal fascia absent; post-medial and subapical ones visible, more or less regularly excurved; between them, at costa, a large pure white spot; apex triangular, white, suffused with isolated gray scales. Cilia white, with dark streaks from extremities of veins.

"Hind wings dark grayish-black, a little lighter at base and costa; median fascia hardly visible, highly excurved at vein 3, thus forming a right-angle. Cilia light gray, with darker median stripe, at apex whitish.

"*Catocala orba* belonged to the black-winged group of the genus, and resembles *C. Judith*, Strecker, and its variety, *miranda*, H. Edw., but is not intimately allied to them, I believe."

Here Prof. Kusnezov gives in detail points of difference between *C. orba* and the two named allied forms, which it does not seem necessary to repeat. I would add that from a casual glance at the figures the upper surface reminds one of *C. Robinsonii*, though smaller and with a different fringe to hind wings; and the under side is entirely different.

G. H. FRENCH, Carbondale, Ill.

BOOK NOTICE.

RECORD OF MY LIFE WORK IN ENTOMOLOGY, by C. R. OSTEN SACKEN, Cambridge, Mass.: 1903; pp. 204.

We desire to thank Baron Osten Sacken very heartily for sending us a copy of his autobiographical memoirs, which we have read with absorbing interest. To us who enjoyed his friendship or acquaintance more than a quarter of a century ago, these reminiscences of the leading

Entomologists of our earlier days, including the author himself, bring back the past very vividly and recall many events that had almost passed into oblivion.

The Baron divides the record of his life into three periods, each of almost equal length. He was born in St. Petersburg, on the 21st of August, 1828, and began to take an interest in entomology at the early age of eleven. When twenty-one he entered into the service of the Imperial Foreign Office. During this period he collected all orders of insects except Lepidoptera, and published two papers on Tipulidæ, and a pamphlet of 166 pages, in Russian, contained a general survey of the insect fauna of the environs of St. Petersburg.

The second period of his career embraces the twenty-one years spent in the United States (1856-1877), during which he was Secretary of the Russian Legation, and afterwards Consul General of Russia in New York. In 1871 he resigned his official position and made several visits to Europe; for the last four years he lived as a private citizen in the United States. This was the period of his greatest scientific activity, and was made memorable by the preparation and publication of his well-known works on North American Diptera, which paved the way for all subsequent students of this order.

A great part of his time, he tells us, was taken up "in acting as a purveyor of material for Dr. H. Loew to work upon, and as a translator and editor of his manuscripts," which were published by the Smithsonian Institution. These volumes evidently owe a great deal of their value to Baron Osten Sacken's careful work, without which, indeed, they could never have been fitted for publication. His own earliest work in America was his Catalogue of the described Diptera, which was published by the Smithsonian Institution in 1858, and was the third of its long series of entomological works, which have been such a priceless boon to all students in this department of national science. Twenty years later, after doing more than any other person to advance the knowledge of North American Diptera by his collections, researches and publications, he concluded his labours on this side of the Atlantic by the issue of a second Catalogue, a critical one, of the order; this also was published by the same Institution.

The third period of his life, which, we trust, may not be closed for many years to come, has been spent almost entirely at Heidelberg, in Germany. His first proceeding was to go to Guben, the residence of

Loew, now an old and broken-down man, and arrange for the packing and transmittal of the magnificent collection of North American Diptera which had been accumulated there, to the Museum at Cambridge, Massachusetts. It contained the original types of all the species described by Loew, about 1,300 in number, and about 1,600 other species. Most, if not all, of these specimens had been sent to Loew by the Baron, with the distinct understanding that they were eventually to be returned to the United States. It may be mentioned that Dr. Loew was well paid for all his services, and that this invaluable collection reached its destination in safety. After accomplishing this task, which, under all the circumstances, was no easy one, the Baron settled down at Heidelberg and continued his studies and researches, extending his field of observation to all parts of the world, and publishing a long series of notable essays and papers as the years went by.

The present "Record" consists of two parts; the first contains a brief introductory sketch of the author's life; the second, which is very much longer, is composed of "twenty-four chapters on historical, biographical, critical and purely entomological subjects connected with his work"; the third part, not yet published, will contain a complete list of all his publications. The most interesting feature of the second part, to one who is not a Dipterist, is the author's description of many notable Entomologists with whom he was more or less intimately associated. Chief among these was Dr. H. Loew, with whom he was in constant correspondence for over twenty years, and in whose work he took so large and important a share. This is somewhat painful reading, inasmuch as Loew seems to have been largely affected by selfish motives and jealousy of others, and to have lacked the straightforwardness and candour that might have been looked for in so eminent a man; at the same time the author closes his account by stating that he is "entitled to a place, not only among the heroes, but also among the martyrs of science."

The briefer notices of others are very delightful, namely, of Kennicott, Walsh, Bassett, Le Baron and Hagen, among American Entomologists, and of Haliday, Winnertz, Zeller, Rondani and others of European fame. Portraits are given of Haliday and Loew, and a facsimile of the marvellously minute caligraphy of the latter, showing 132 lines of written matter on an ordinary sheet of foolscap paper!

In this "Record of His Life" Baron Osten Sacken has certainly given us a volume of very great interest and also of much historical value. From its pages one learns to appreciate more than ever the excellence of the author's scientific work and the unselfish spirit in which he ever devoted himself to it. As he truly says: "The best part of my work is that which has assisted and stimulated the work of others, and I am conscious at the same time that *that* part of my work is the largest."

Mailed December 4th, 1903.

